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Molecular gas and dust influenced by massive protostars

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Epilogue

It's done, finished!

I stare at the wall, slightly dazed. This moment has been intensely anticipated and still it appears to have caught me by surprise. I will pull myself together and take the opportunity to look back at the past four years in these few pages.

I will start by contradicting my very first statement in this epilogue. One of the defining aspects of scientific research is that it can never really be finished. Nonetheless, the writing of this particular piece of text does bring some closure. Perhaps I should continue to publish a thesis book like this every few years..., or perhaps this one was enough. However unfortunate the fact that it is never 'done', this is a necessary trait for science to remain appealing. We will never fully understand Life, the Universe and Everything, but we try to improve step by step each time.

A second characteristic of research is that it is by definition impossible to know a priori which conclusions will be found. You can have expectations, of course, and many will agree with me that the most enjoyable moments are those where your expectations are proven wrong, and new insights start to dawn. At the same time, I have found the intrinsic uncertainty about outcomes and methods challenging to deal with.

The third and final aspect that I would like to mention here is that scientific research, at least in the branch that I have gotten involved in, is impossible to do on your own. An aspect I find particularly enjoyable. The need to find partners begins in projects, for example extensive numerical simulations or big observatories, that are too large or too expensive for any individual scientist, institute or country to support. These ambitious large collaborative projects are definitely part of what makes astronomy so interesting, not just scientifically, but also considering inter-human relationships.

Unfortunately, large projects and big budgets go hand in hand with struggles for prestige, respect and political power. I have learnt through personal experience that the otherwise friendly world of astrophysicists is not free of political games. A community that is fully transparent and honest, in which scientific recognition is not commanded by political leverage but purely by scientific accomplishments, is sadly utopia.

Despite the unavoidable politics, I am happy that the nature of my research project was such that I could enjoy extensive communication and collaboration with colleagues in The Netherlands and abroad, in Europe and outside. With the generalities out of the way, I should now come to the point where I acknowledge the efforts of the various people who have contributed, be it intentional or not, to the work gathered in this thesis.

First of all, my supervisors. I have had the luxury of having two: Floris and Marco, I have truly benefited from expertise and insights from both of you. This thesis and the road leading to it would have been completely different without either one of you. Marco, thank you for the guidance during my scientific, professional and personal development. The process is by no means finished, and I hope to have many future opportunities to learn from you and to further pursue my attempts to incorporate a bit more of your attitude into my personal style. Thank you also for your continuous commitment to my PhD project. Floris, thank you for reflecting on my work at various (really very diverse) stages. I remember in the beginning I was reluctant to come to you with questions whenever I got stuck; too reluctant, in your view. Over the past years, I've definitely observed a positive trend in the tendencies we have to walk into each other's offices unannounced. Finally, thank you for taking over the final loose ends of the paper that was almost finished when I became a father, and for teaming up with Marco in banning me from the institute in the first two weeks after the birth.

Next, some people have contributed significantly to the scientific contents of this thesis, as reflected in the authors listed on the title page of each chapter. Volker, Laurent, Steve and Darek, I want to thank you explicitly for your contributions. Russ, apart from your support on my very first scientific publication, you continue to make me feel welcome to discuss research, software development, drinks or family life (none of which are mutually exclusive). Peter, your suggestions regarding my text were highly appreciated. In addition, the members of the JCMT-SLS team deserve a thank you, specifically Gary, for inviting me to Manchester for a week back in 2008, René, Jenny and Helen. I am also indebted to the *Herschel*-CHESS team, specifically Cecilia, Emmanuel, Mihkel, Adwin, Tom, Claudia, Steve and Charlotte. It has been a pleasure working in the context of these two groups, and to abuse the 'work' contexts to enjoy local varieties (NL/UK/DE/FR) of beer, wine, and stronger stuff.

My time in the office was spent in the close proximity of my roommates. Wilfred, you were the ultimate example of how to finish a thesis without any apparent signs of stress. The rare whiskey-drinking occasions for me were always in your company, either in Groningen, or somewhere abroad at a conference. When you left the office, it was a shame to lose the opportunity for some daily education on the hardrock classics. Antonela, our periods in the office overlapped for almost the entire four years. I enjoyed our conversations, sharing frustrations and victories, inside as well as outside the office at the various dinner parties. Facundo, it was a pleasure to get you 'for free' in the same package. It was sometimes difficult to get ourselves back to work, especially, I should say, once Koshy joined the office. When you first arrived, Koshy, you seemed shy, but it didn't take you long to develop into a fully integral part of social life at the institute. Thanks for sharing jokes, gossip and laughter. Your perceptive mind was sometimes able to notice when I was worried, angry or happy about something before I was ready to admit it to myself.

Hugo, we have shared a kitchen, bathrooms, a bar, many drinking occasions, an undergraduate office at Kapteyn, and finally the wall between our current offices.

Our ‘weekly’ plan-making sessions were often fruitful and beneficial to productivity, but in the end not pursued regularly enough. We’ve seen each other evolve since we first met, and I believe we have helped each other in getting where we are. You’ve had the capacity of ‘buurman’ in more than one respect. I certainly hope to share a ‘street’ with you again some time in the future. Arjen, my most frequent contact with a job in the real world. Thanks for putting things in perspective and allowing me to experience a bit of business life through your eyes.

I thank the current and former members of the Groningen ISM group for stimulating discussions (is it possible for research group meetings to be *too* informal?), cookies, cake, dinners, and always finding a new excuse for a celebration. I would like to express my gratitude to the supporting staff at SRON, Petra, Engelen and Femke, and at the Kapteyn Institute, who contribute significantly to the stable social atmosphere: Wim, Martin, Eite, Hans, Jackie, Gineke, Karina, Johanneke and Lucia. And of course, Hennie: I admire the effort you devote to each individual on a personal level. It must be especially difficult to grow fond of many different people, only to see them leave within a few years time.

Many other colleagues and friends have played a role in the friendly atmosphere I have experienced. I will name only a few. Edo, thanks for sharing experiences as a recent doctoral graduate, and Alicia, your open mind and strongly voiced opinions are always appreciated. We have enjoyed your company when all four of us ‘marry buddies’ still lived in Groningen, our connection has survived your move to Leiden, and I’m confident we will keep in touch in the future, even with an ocean in between. JP, Aycin, Dieter, Chris, Christiaan, Matthieu (thanks for the one-time hardrock session with Wilfred), Harriet, Rosina, Stéphanie, Linda, Seyit, Parisa, Boris, Tineke, Derek, Else, Jonathan, Johan, Joost, Inga, Antonio, thanks for entertaining and/or helpful discussions about science, software, music, language, food, babies, games, racing, the job market, ...

Naturally, I have saved the very last paragraph for the two most important people in my life. Beatrijs, you offer me the stable foundation on which I rely. You provide the balance that I need so badly, you are a sounding board for all my worries, big and small, and you remind me to recognize and celebrate successes. With your help, I phrase things more clearly, and see the bigger picture in things. With our unity, you give me confidence. You gave us Aidan. Aidan, you make our lives rich, happy and purposeful. I am committed to care for you and to share your emotions, to give you a life as happy as my own.

You are my everything. *kus*

Matthijs H. D. van der Wiel, Groningen, April 2011